Envirothon 2022 Issue Test

Waste management

1. According to the EPA waste hierarchy for nontoxic waste, rank the following methods of waste disposal from most (1) to least (6) preferred.- (6 points)

Most preferred is 1

Least preferred is 6

Answer:

1__Source reduction

2__Reuse

3__Recycling

4__Compost

5__Energy recovery

6__Treatment and disposal-landfill

2. Why is source reduction beneficial to the environment? (1 point)

   Answer: If the team list any of these answers they will be given the full point.
   - It reduces greenhouse gas emissions that contribute to global climate change.
   - It helps sustain the environment for future generations.
   - Reduces the amount of waste that will need to be recycled or sent to landfills and incinerators.
   - Allows products to be used to their fullest extent.

3. What is the difference between recycling and waste prevention? (2 points)

Answer: Recycling is a process for redirecting discards away from disposal and back into the flow of commerce, where they are transformed and used as feedstocks to make new products. In contrast, waste prevention is about not making waste in the first place – through changing what we use and how we use it.

4. In the article “How to Regulate Our Waste-full World” by Jen Allen Ph.D., she explains lessons learned from the past 50 years of disposing waste. What does the idea “the Global North dumping its dangerous waste on the Global South” mean? (1 point)

Answer: It means there are major inequities between countries when it comes to waste disposal. As we move forward equity must lie at the core of our efforts to protect the most vulnerable.

5. What is the fastest growing waste stream in the world? (1 point)
   Answer: E-waste

6. Name three main benefits of the Plastic Pollution and Recycling Modernization Act recently passed in Oregon. (3 Points)

Answers could be any three of these six:

- Shares and scales responsibility across the recycling system.
- Increases access to recycling
- Prevents plastic pollution
- Creates one statewide list of what can be recycled
- Incentivizes sustainable products
- Creates accountability to outcomes.

Landfills, Food Waste and Composting

7. What is leachate? (1 point)

Answer: Any of these answers for full points:

- Leachate is "garbage juice" and is formed when rain water filters through wastes placed in a landfill.
- When this liquid comes in contact with buried wastes, it leaches, or draws out, chemicals or constituents from those wastes.
- Leachate is defined as any contaminated liquid that is generated from water percolating through a solid waste disposal site, accumulating contaminants, and moving into subsurface areas.

8. What happens to leachate after it is created? (1 point)
   Answer: Drained leachate is gathered in pools, allowed to settle and treated as wastewater before being released.

9. Name one gas that is produces when food waste decomposes in a landfill. (1 point)
   Answer: Methane or Carbon Dioxide

10. What percent of food produced or imported for consumption in the US is never eaten? (1 point)

A. 24% or less
B. 25%-40%
C. 41%- 50%
D. 51% or more

Answer: B The production and consumption of food leads to significant environmental impacts, and an estimated 25 to 40 percent of all food produced or imported for consumption in the United States is never eaten.

11. From the choices below, choose the list where every one of items be composted. (1 point)

A. Fireplace ashes, straw, vegetables and yard trimmings treated with chemical pesticides

B. Wood chips, disease ridden plants, newspapers and tea bags

C. Vegetables, cardboard, grass clippings and cat box litter

D. Coffee grounds, leaves, egg shells and fruit

Answer: D

12. List 3 benefits of composting. (3 points)

Answer:

It enriches the soil

Helps retain moisture

Suppresses plant diseases and pests

Reduces the need for chemical fertilizer

Encourages the production of beneficial bacteria and fungi that break down organic matter to create humus a nutrient filled material

Reduces methane emissions from landfills and reduces carbon footprint

Brownfields and Hazardous Waste

13. What is a brownfield? (2 points 1point for property + 1 point for presence of pollutants)

Answer: A brownfield is real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contamination that poses a threat to humans.

14. What is the estimate of the number of brownfields in the US? (1 point)

Answer: EPA estimates there are close to half a million brownfields in the US.

15. What are the three main contaminants most commonly reported from brownfields cleaned up using U.S. EPA grant funds (3 points)

Answer: Waste from fertilizer factories, heavy metals (lead, iron mercury arsenic copper and cadmium) petroleum, pesticides and asbestos

16. What is the name of the federal agency that provides funding to revitalize brownfields? (1 point)

    Answer: EPA

17. What are two environmental benefits of cleaning up a brownfield? (2 points)

    Answer: Cleaning up and addressing brownfields can improve local environmental quality by remediating contaminated soil and water. Redeveloping brownfields in urban areas, also known as infill, can have additional environmental benefits such as reduced vehicle miles traveled and the associated air emissions, as well as reduced energy consumption. Reusing brownfields also reduces the need for additional greenfield development, thus conserving undeveloped land elsewhere in the community.

18. What are 2 economic benefits of cleaning up a brownfield? (2 point)

Answer: Brownfields reuse and redevelopment can create local jobs, provide additional tax revenue, and grow the local tax base by increasing area property values. Investing in the cleanup and reuse of brownfields often attracts new private investment in an area that would not have otherwise existed.

19. What is a social benefit of cleaning up a brownfield? (1 point)

Answer: Brownfields reuse and redevelopment can create local jobs, provide additional tax revenue, and grow the local tax base by increasing area property values. Investing in the cleanup and reuse of brownfields often attracts new private investment in an area that would not have otherwise existed.

20. What are 3 examples of household hazardous waste materials? (3 points)

    Answer: Examples include pesticides, herbicides, poisons, corrosives, solvents, fuels, paints, motor oil, antifreeze, and mercury and mercury-containing wastes and batteries. Asbestos insulation, medications, pains and e-waste.

21. What are 2 problems associated with the improper disposal of hazardous wastes? (2 points)

    Answer: Throwing them in the garbage can threaten sanitation workers, who can be poisoned or injured by acids, fires, and explosions. The outcome of improper use and handling of household hazardous wastes is the potential contamination of surface water, groundwater, and air resulting in exposure to humans.

22. In the article, "Types of Pollution Found in Brownfields" by Kristin Campbell, she cites a study published in May 2010 that identifies 3 effects of lead accumulation on the bird, the pied flycatcher. What were the 3 effects? (3 points)

Answer: The birds laid fewer eggs, had higher egg and fledgling mortality and were generally in poor health.

23. Why should you bag up dog waste and put it in the garbage? Circle the correct answer. (1 point)
    A) It can carry bacteria, viruses and parasites that can threaten the health of humans and wildlife.
    B) It contains nutrients that promote weed and algae growth.
    C) It is a toxic pollutant
    D) All of the above

    Answer: D

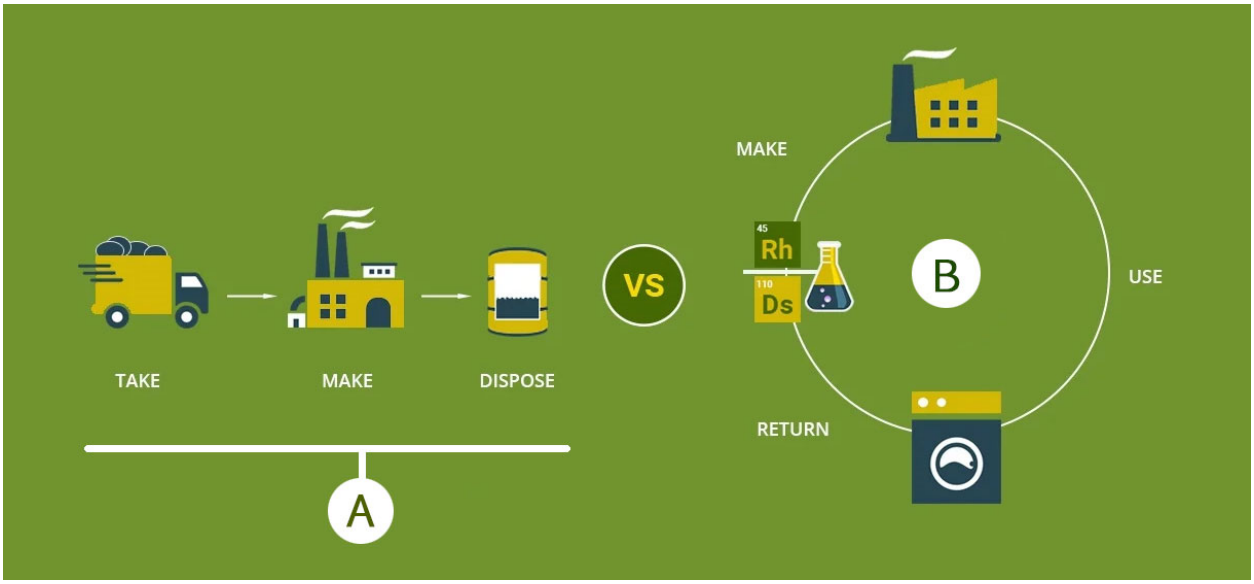
Waste to Energy Systems

24. Give an example of a waste to energy system. (1 point)

    Answer: anything that captures something to convert into energy. Such as when you burn trash and capture the gases in the air to create energy; biomass- taking wood waste and using it as biomass to heat buildings; etc.

25. Which of these diagrams best describes a circular economy? (1 point)

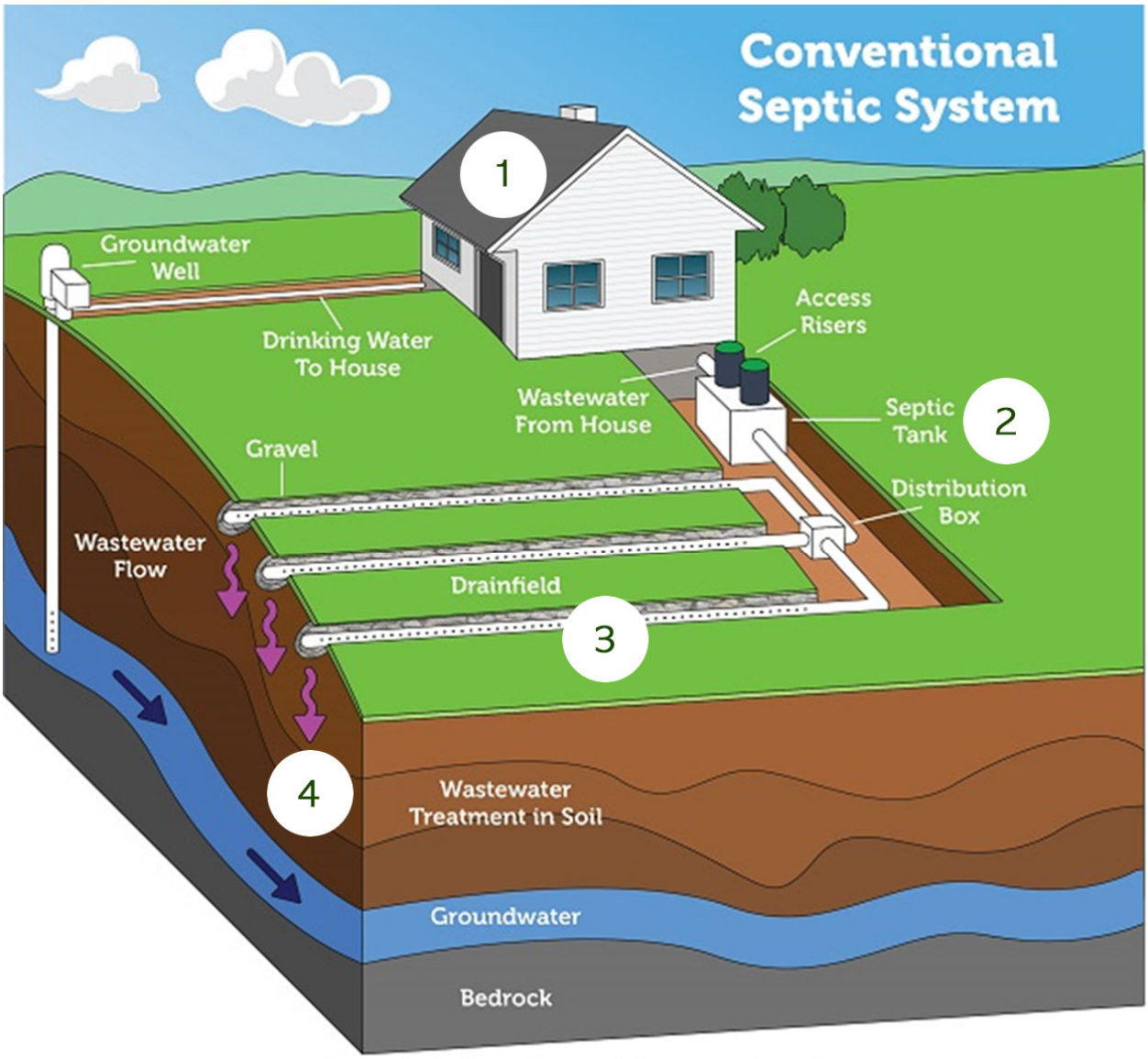
    Answer: B



26. Why is a circular economy important when reducing waste? (1 point)

    Answer: A circular economy in which materials are continuously repurposed until they are finally recycled.

27. Explain the 4 steps identified below of a conventional septic system as wastewater travels from the house, septic tank, drain fields and the soil. (4 points)



Please note: Septic systems vary. Diagram is not to scale.

Answer:

1. Wastewater travels from the house (toilets, washing machine, sinks, etc.) to the septic tank.

2. In the septic tank the solids settle to the bottom and wastewater is discharged to the drain fields.

3. In the drain field, the effluent water is then filtered through the stone.

4. In the soil, the effluent water is then treated further by microbes.